Table 1

TIME DELAY FACTORS

TIME PERIOD	DESCRIPTION	DELAY (ms)
1&2	Sample Channels Process Data	500.0
3	Code Data & Transmit	0.1
4	Signal Travels to Earth	3.2
5	MES Filters	0.1
6	Decode, Process Signal	50.0
7	Delay before Transmission	200.0
8	Length of Transmission	100.0
9	Signal Travels to LAND MOBILE Receiver	0.1
		TOTAL DELAY = 853.5

NVNG monitoring systems are subject to an inherent delay of approximately 1 second before a "unoccupied channel" is actually used by the satellite. This raises questions about the effectiveness of such operational devices.

C. Doppler Smearing

The satellites used in the MSS will be traveling at a high rate of speed. When they are directly overhead, the Doppler shift to a signal transmitted from the earth will be zero, but when they are near the horizon, it will be a maximum. It is possible both to determine the magnitude of this shift and provide an estimate of the spectrum of the received signal at the satellite from several land mobile transmitters.

The geometry used to determine the Doppler of the land mobile transmitted signal at the satellite is shown in Figure 2. The angle Θ is the elevation angle to the satellite from the land mobile transmitter when looking broadside to the direction of travel of the satellite, and ø is the azimuth angle from the direction of travel of the satellite to the land mobile transmitter when looking down from the satellite.

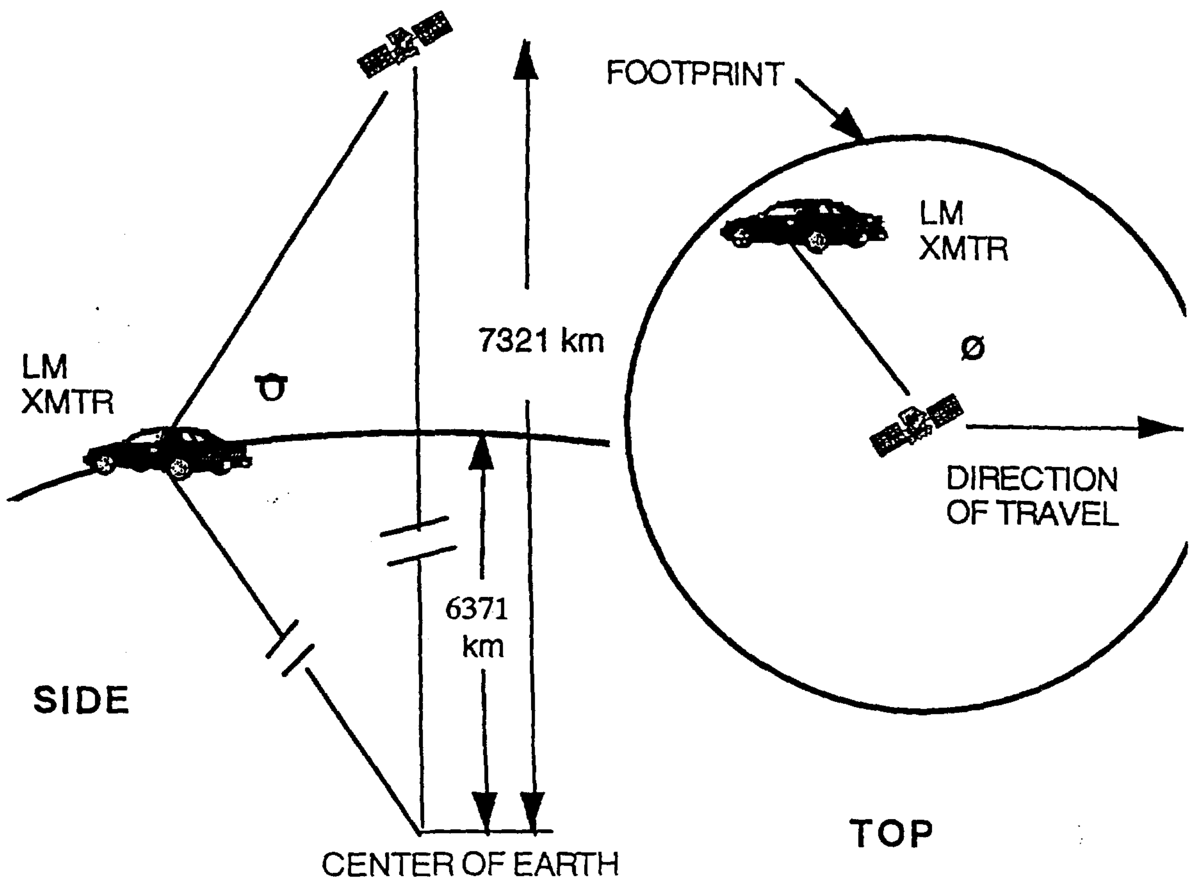

Figure 2: Geometry for Doppler computation.

Using this geometry, the Doppler frequency shift, fd (in kHz) of a signal on frequency fo (in MHz) received at the satellite at an altitude of 950 km moving at a velocity v is given by:

$$fd = \frac{fo \cdot v \cdot 6371}{0.3 \cdot 7321} \cos \theta \cos \varnothing$$

The period of the MSS satellite is reported to be about 104 minutes, so the velocity can be determined, and it is approximately 7372 m/s. The resulting Doppler frequency shift when the land mobile transmitter is located along the path of travel of the satellite is shown in Figure 3. Based on the FCC applications filed by the NVNG proponents, users will be able to communicate with a particular satellite down to an elevation angle of 15 degrees. Inserting this data into the above formula allows us to predict a maximum frequency shift of about 9 kHz that can be experienced when the land mobile transmitter is located at the fringe of that field of view.

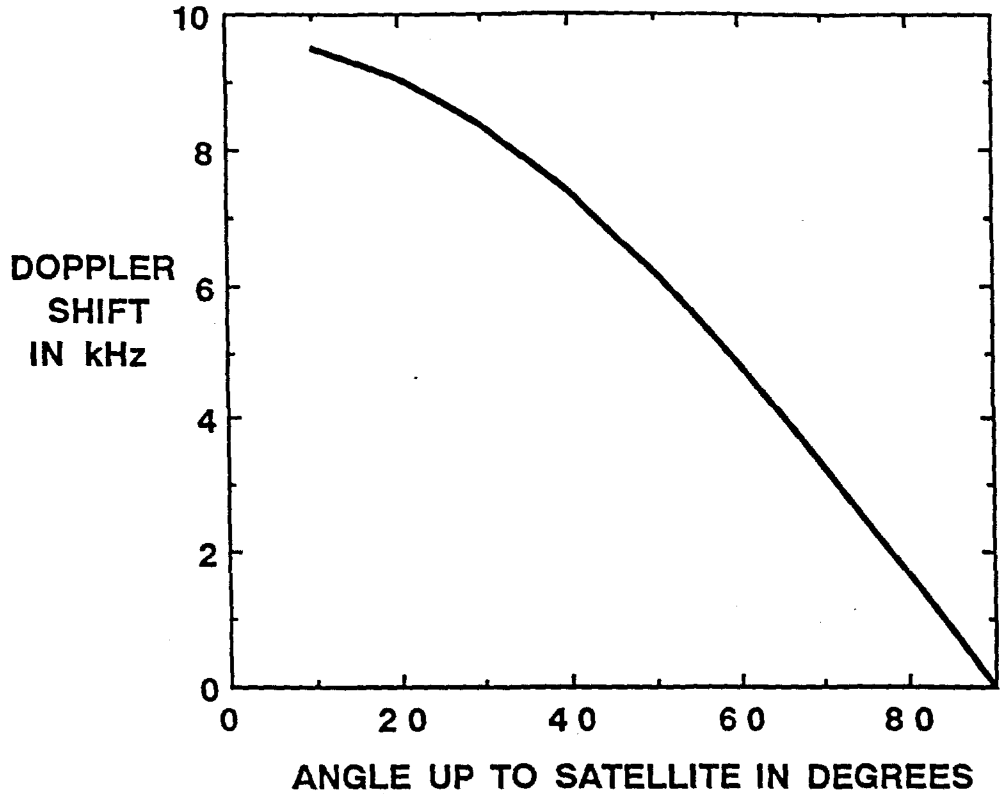

Figure 3: Doppler shift from transmitter located along path of satellite.

Over the footprint of the satellite, it is assumed that isoflux coverage is produced. In other words, the signal received at the satellite from any MES within the footprint will be the same. The land mobile transmitters, on the other hand, do not have the same power, ERP, or the same antenna elevation pattern as the MES. As a group, they operate with a variety of technical characteristics. Therefore, it is not possible to state exactly the cumulative power density that will be received at the satellite from the land mobile transmitters even if their location in the footprint were simulated. However, it is possible to show the distribution of frequencies that can result from a somewhat random distribution of land mobile transmitters. This is used to highlight the effect that doppler smearing will have on the monitoring capabilities of the NVNG satellites.

The satellite footprint has a radius which can cover most of North America when it is above the central United States. The footprint can cover most of the major metropolitan areas listed below simultaneously when located over Ohio, for example. With their large population, and the number of licensed transmitters, it is expected that many transmitters would be simultaneously in operation on the channels in those cities. For purposes of illustration, it has been assumed that a total of only six transmitters are operating on each of three adjacent channels (identified as the reference channel at 0 kHz, a channel 12.5 kHz above the reference and a channel 12.5 kHz below the reference) in the 450 MHz band in these cities.

Table 2

CITY	RELATIVE FREQUENCIES (kHz)	DOPPLER (kHz)
Montreal	0, 12.5	7.53
Toronto	+12.5	5.71
Boston	-12.5	7.06
New York	0	5.43
Washington, DC	-12.5, 0	2.96
Miami	0	-5.78
Memphis	-12.5, +12.5	-7.42
Chicago	-12.5, 0, +12.5	-1.03
Detroit	-12.5, +12.5	2.37
Houston	0	-9.13
St. Louis	-12.5, +12.5	-5.35

The Doppler frequency shift of their signals received at the satellite has been computed as shown in the table. The transmitters have been randomly assigned one of the three frequencies and to the cities as shown, and it is assumed that these frequencies are spaced 12.5 kHz apart. Most of the energy is presumed within two kHz of the carrier, though the occupied bandwidth is much wider. The resulting signals received at the satellite are displayed in Figure 4.

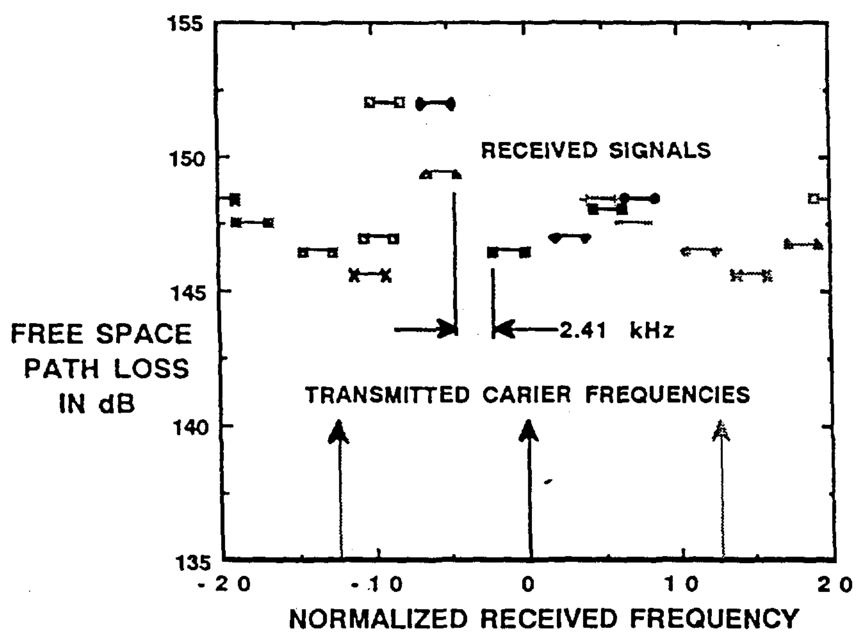

Figure 4: Received spectrum at satellite from 18 transmitters

Even under this conservative analysis, it is evident that there is little room in this spectrum for any other signal. The widest unoccupied frequency spacing between the Doppler shifted spectra shown is 2.41 kHz between -4.44 and -2.03 kHz, and only one other unoccupied spacing is wider than 2 kHz at this snapshot in time. Presuming that the MES are frequency locked to the satellite, so their Doppler is compensated for, NVNG operators would need very high resolution frequency agile transmitters to transmit signals that could arrive exactly in these un-channelized slots.

In actual fact, given the characteristics of the existing use of the 450 MHz band discussed above, normally there would be many more than six transmitters in operation on each of them somewhere in the eastern half of North America. This analysis on the spread of signals due to the Doppler shift questions whether there is any capacity for MSS transmissions on unoccupied frequencies in the crowded 450 MHz band.

This situation will only get worse. While channels are currently spaced every 12.5 kHz in the 450-470 MHz private land mobile bands, the FCC has adopted rules to "refarm" this spectrum to increase occupancy. Channels have been created every 6.25 kHz apart and all land mobile equipment authorized after the year 2005 must be capable of operating within the very narrowband channel spacing. This will provide additional channels for more land mobile capacity and further reduce any excess capacity for sharing possibilities.

VI. Analysis of Existing Sharing Studies

NVNG proponents have provided studies that de-emphasize their original intention solely to use vacant channels. Instead, more recent studies have attempted to show that even if NVNG systems and terrestrial land mobile systems were to transmit simultaneously on the same channel there would be no harmful interference to terrestrial land mobile systems. Since the NVNG systems would employ monitoring capabilities, it is argued that such an analysis represents a worst-case review of interference to land mobile systems.

The results of such an analysis as contained in 8D/36 are flawed, however, for several reasons. First, it erroneously assumes low terrestrial land mobile receive antenna heights. Second, its assumptions regarding the potential height of satellite MES transmitters are insufficiently conservative. Third, it ignores the effects of squelch circuitry. Fourth, although the 8D paper addresses both uniformly spread and "clustered" satellite MES transmitters, its suggested concentrations are far fewer than likely to occur. Finally, the analysis understates interference events by not considering the effects of interference received at the mobile relay repeater stations. As a result, the existing sharing studies do not prove that spectrum now allocated to terrestrial land mobile service could be shared with NVNG MSS.

A. Antenna Height of Terrestrial Receivers

The sharing analysis tendered to 8D considered the interference from LEO MES devices into land mobile stations, the latter of which are assumed to be uniformly distributed in a circular region around a land mobile base station. The propagation model used to calculate the path loss from the MES units to the land mobile stations is that given in ITU-R Rec M.1039,[10] with an antenna height product of 10 m.

However, the 8D analysis only considers the interference effects to mobile stations, not fixed, base stations that are prevalent in both simplex and mobile relay configurations. Base site receive antennas are situated at much greater elevations than the mobile stations - typically 100-300 feet although antenna elevations of 1000 feet or more are possible for some wide-area systems with hill-top or building-top sites. This results in both higher received powers from interferors located at a given range from the base site, as well as a much greater number of interfering units being "seen" by the base site, as compared to a mobile unit.

As an example, based on the propagation model of ITU-R M.1039, an increase of elevation of the land mobile station from 2 meters to 60 meters (roughly 200 feet) would result in a 30 dB increase in received interfering power from an MES unit at any range. In addition, this increase in height would translate to an increase in detectable interference range by a factor of 5.5, with the area of potential interference expanded by a factor of 30 (other propagation models, such as the model developed by Hata for land-mobile situations,[11] lead to similar results). The combination of these effects would result in a very substantial increase in interference from MES units over that which is given in the paper submitted to 8D.

B. Height of Satellite MES Transmitters

In the 8D analysis, satellite MES units are assumed to be located in close proximity to the ground. However, based on the information filed in applications at the FCC and public information provided by NVNG proponents such as LEO One USA,[12] there are many likely scenarios where this would not necessarily be

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[10] Rec. IT-R M.1039, "Method for Evaluating Sharing Between Stations in the Mobile Satellite Service Below 1 GHz and FDMA Non-Geostationary-Satellite Orbit (Non-GSO) Mobile Earth Stations," ITU Recommendations, 1994. This propagation model corresponds to a so-called "plane earth", or "4th-law" model, in which path loss increases as a function of range raised to the fourth power, i.e., 12 dB per doubling of range. In this model, path loss also decreases according to the square of the height of either the transmitting or receiving antenna, i.e., -6 dB per doubling of height.

[11] M. Hata, "Empirical Formula for Propagation Loss in Land Mobile Radio Services," IEEE Transactions on Vehicular Technology, August 1980.

[12] "Mobile Satellite Market for Low Cost Data Services," LEO One, USA (information booklet).

the case. For instance, in business communications use, the highly portable MES unit could easily be used in the upper floors of hotels or office buildings (probably near a window in order to obtain a good link). Perhaps more significant are the industry and utility remote monitoring and alarm applications—described in IWG-2A/25 -- where the satellite MES unit is connected to some type of fixed monitoring device or sensor at a site. In these circumstances, it is also likely that the MES unit antenna would be located at the top of a utility pole or a building in order to ensure a reliable unobstructed communication link. This will result in an increase in interference to land mobile stations on the ground similar to that discussed in the immediately preceding section.

More importantly, the interference path to the land mobile system base site antennas would now in many cases be essentially line-of-sight without obstruction. For this situation, the correct propagation model would not be ITU-R M.1039, but rather free space propagation.[13] This is, of course, the same propagation model that exists between the MES unit and the LEO satellite, except that the land mobile base site is much closer to the interfering MES units than the satellite (which orbits at an altitude of about 1000 km above the earth).

The end result is that for MES units located high enough above the ground, a land mobile base site acts effectively as another (unintended) satellite receiver for all those elevated MES units within its line-of-sight. The "footprint" of the base site would correspond roughly to the earth's radio horizon (for a 200 foot site, this would be between 30 and 60 km, depending on the elevation of the MES unit; for a 1000 foot site, up to roughly 100 km). Moreover, the interfering signal would be received at levels 20 to 60 dB above those seen by the LEO satellite. The potential for harmful interference under these circumstances is considerable. In a dense metropolitan area, a single high-sited MES transponder could cause significant interference with every land mobile system in the surrounding area with which it shares frequencies.

C. Squelch Delay

Predicted interference from MSS devices to terrestrial land mobile services is exacerbated due to the operational nature of land mobile transmitting equipment. Nearly all land mobile analog FM radio systems rely on carrier squelch circuits to suppress noise when a channel is unoccupied. These carrier squelch circuits will often act within a range of 20-350 milliseconds to mute the audio upon loss of the desired signal and must then quickly unmute upon restoration of the desired signal. While a fast acting squelch is desirable, it also increases the probability of false mutes. Since squelch circuits must operate correctly over a wide range of desired signal quality levels and conditions, there is a wide variation of squelch operating ranges, as reflected above.

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13 In the "free space" propagation model, path loss increases only with the square of range, i.e., only 6 dB per doubling of range, as opposed to 12 dB per doubling with the plane earth model of Rec. ITU-R M.1039.

Carrier squelch circuits act to stretch out the duration of service interruptions. The scenario is the following: an on-going land mobile communication receives interference; once detected, the squelch engages approximately 20 - 350 milliseconds after the interference is detected; when the interference ceases, the squelch circuitry disengages. It is estimated that squelch circuitry disengages in approximately the same amount of time that it takes to engage, namely, 20 - 350 milliseconds. It is assumed that the average squelch circuitry takes 100 milliseconds to disengage, the total service disruption to a terrestrial land mobile service must be computed to be 100 millisecond (typical duration of an interfering MSS transmission) plus another 100 milliseconds for the squelch to disengage.

Land mobile data applications are highly susceptible to such service disruptions. Momentary interruptions can easily destroy a packet or packets of data which, when repeated, again stretch service interruptions as above. In cases where the data stream represents system control functions, longer interference durations can cause severe user disruptions. An example of this is interruption to a trunked system control channel that causes a user's voice channel connection to be "dropped" and thus requires the re-establishment of that connection. Since the MSS NGNV interference studies fail to consider this issue, they understate the level of service disruption to the land mobile services.

D. Distribution of MES Devices

The analysis of the 8D paper assumes that the geographic density of MES units is either uniformly spread over the continental United States (CONUS), or is "clustered", *i.e.*, roughly proportional to the relative density of population in a given area. It is difficult to know precisely what densities result in the latter case, since the actual numbers used in the analysis are not given. The average population density in the CONUS is about 70 people per square mile.[14] In a large city such as Chicago it is about 12,000 per square mile (170 times as dense); in a moderate-sized city like St. Louis it is about half that. Based on this, a "cluster factor" of about 100:1 in a metropolitan area seems reasonable.[15]

The footprint of a LEO satellite generally covers the entire CONUS, with a coverage diameter of about 4000 km. A typical land mobile system in a metropolitan area with a 40 km coverage diameter, as specified in 8D/36, would therefore have about 1/10,000th the geographic area of the CONUS. Applying a cluster factor of 100:1, that would mean that roughly 1/100th of all MES units (and, consequently, 1/100th of all a satellite's traffic load) in the CONUS would lie in this 40 km wide coverage area.

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[14] Missouri State Census Data Center, "1990 STF3 Extract Report," University of Missouri WWW Page (gopher://coins.coin.missouri.edu/00/reference/census/us/basictables/us.text/states/UNITEDST)

[15] It appears that the cluster factor used in the 8D paper was substantially less than 100:1. An attempt to reproduce the analysis in that report, using the stated assumptions and a cluster factor of 100, yielded probabilities of interference roughly an order of magnitude higher than those shown in the report.

In public information supplied by LEO One, it is estimated that the initial, first-year U.S. market size for NVNG MSS is about 74,000. Using this as a guide, this implies 1/100th this number, or just 740 MES units, in a 40 km wide metropolitan coverage area. This is a remarkably small number for many of the proposed applications described in IWG-2S/25. Take, as just one example, electric meter reading. There are certainly hundreds of thousands of residential homes and businesses in the Chicago metropolitan area, for instance, that require meters to be read.[16] If, Commonwealth Edison contracted with a LEO service provider, to provide remote meter reading capability to just 1% of its total meters (those most difficult to access), this would be a number much greater than the 740 units allotted to the entire area - and this is just one company, in one utility, in one market segment.

Similar scenarios could be constructed in any number of other market segment applications proposed by the proponents of NVNG MSS such as business communication and E-mail, credit card validation, and alarm services. Each of these has the clear potential for orders of magnitude greater MES densities than suggested by the assumptions above, which would translate directly into orders of magnitude greater probabilities of interference than those estimated in 8D/36 (even without applying considerations of antenna height discussed above). Also, it is worthwhile to note that in those locations where the density of MES units is likely to be greatest, there is likely to be terrestrial services installed to perform the same service.

It is likely that none of the proposed NVNG MSS systems will have the capacity to meet such levels of demand in all the markets across the U.S. The real issue, however, is that there is nothing in the economics of the situation to suggest that the deployment of MES units will be anywhere near as uniform and diffuse as is implied even by the "clustered" MES density model - rather, there are very plausible economic scenarios in which MES deployment occurs in highly concentrated pockets, situated in crowded metropolitan areas, in response to demand for LEO services by large (and profitable) customer bases in those areas. This is precisely the type of situation that would lead to aggravated interference levels to public safety and other land mobile services in those same areas.

E. Repeater Operation -- Number of Occurrences of Interference

In the UHF band of land mobile frequencies, most operation involves the use of a high site repeater. This technique allows communication from a mobile to one or many mobiles over a wide metropolitan area when the propagation path directly from mobile to mobile prohibits direct communication. In operation, a signal is transmitted from a mobile to a repeater at a base site on frequency number one,

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[16] Commonwealth Edison counts over a million customers in the City of Chicago alone. Commonwealth Edison, "Fact Sheet," Commonwealth Edison WWW Page (http://www.ucm.com/ucm/info/comfact.htm).

f_1. At the repeater site, the received signal is decoded and analyzed to assure that the message is a valid one for the system. If so, the signal is remodulated and retransmitted on frequency f_2 almost immediately (the delay is usually less than 200 ms). This transmission is then received and decoded by all of the radios in the particular work group, or fleet, for which it was intended.

If the signal is interfered with as it is received at the base repeater, the interference is remodulated when the original signal is retransmitted by the repeater. The interference event is therefore multiplied by the number of receivers that are intended to receive the original message. The sharing analysis tendered to 8D presumed that only receivers that were within the short range of the low height MES were interfered with. Given the performance of repeaters as described above, the interference will occur to more units over a greater geographical area than reported.

VII. CONCLUSION

From this analysis, it is apparent that significant problems exist with NVNG systems sharing existing domestic terrestrial land mobile allocations without significant probability of harmful interference. Satellite scanning receiver interference avoidance approaches will be compromised by doppler effects and time delays. When realistic assumptions are made, NVNG use of the land mobile bands would result in substantial interference to land mobile systems operating therein.

This analysis addresses domestic U.S. private land mobile services. However, these bands are heavily used by other administrations for terrestrial land mobile systems. Therefore, this analysis likely would be broadly applicable for many countries throughout the world.

Land Mobile Communications Council

Members

American Association of State Highway and Transportation Officials (AASHTO)
American Automobile Association (AAA)
American Mobile Telecommunications Association (AMTA)
American Petroleum Institute (API)
American Trucking Associations, Inc. (ATA)
Association of American Railroads (AAR)
Association of Public-Safety Communications Officials - International, Inc. (APCO)
Cellular Telecommunications Industry Association (CTIA)[17]
Forestry-Conservation Communications Association (FCCA)
Industrial Telecommunications Association, Inc. (ITA)
International Association of Fire Chiefs (IAFC)
International Association of Fish and Wildlife Agencies (IAFWA)
International Municipal Signal Association (IMSA)
International Taxicab and Livery Association (ITLA)
Manufacturers Radio Frequency Advisory Committee, Inc. (MRFAC)
National Association of State Foresters (NASF)
Personal Communications Industry Association (PCIA)
Telecommunications Industry Association (TIA)[18]
UTC - The Telecommunications Association

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17 CTIA abstained when considering this document.

18 TIA's association with this subject document is limited to its Mobile and Personal Communications Division.

EXHIBIT B

BEFORE THE

Federal Communications Commission

WASHINGTON, D.C. 20554

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JUN - 6 1995
FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF SECRETARY

In the Matter of	)	
	)	
Preparation for International Telecommunications Union World Radiocommunication Conferences	)	IC Docket No. 94-31
	)	

RESPONSE
TO
JOINT SUPPLEMENTAL REPLY COMMENTS

This Response to Joint Supplemental Reply Comments ("Response"), submitted by the undersigned private land mobile radio user organizations and industry trade associations addresses issues raised in the Joint Supplemental Reply Comments ("Joint Comments") filed on May 18, 1995 by pending applicants for new or modified facilities in the Non-Voice, Non-Geostationary Mobile Satellite Service ("NVNG").[1/]

1/ The Joint Comments supplement previous comments submitted by the NVNG MSS parties in the above-captioned proceeding concerning the 1995 World Radiocommunication Conference ("WRC-95"), FCC 95-36 (Released: January 31, 1995). The Joint Commentors are: CTA Commercial Systems, Inc.; E-SAT, Inc.; Final Analysis Communication Services, Inc.; GE American Communications, Inc.; LEO ONE USA Corporation; Orbital Communications Corporation; Starsys Global Positioning, Inc.; and Volunteers in Technical Assistance.

I. RESPONSE

1. The undersigned are pleased to observe that in their Joint Supplemental Reply Comments the NVNG MSS proponents essentially abandon consideration of Private Land Mobile Radio Service spectrum for reallocation to NVNG MSS uses. The change in position on allocations by NVNG MSS proponents concedes that land mobile spectrum is heavily utilized and that any sharing with non-geostationary MSS below 1 GHz would cause substantial and harmful interference to the Land Mobile services.[2/]

2. The NVNG MSS proposal, as illustrated in the Joint Supplemental Reply Comments, is as follows:

- Service Downlink: 386-390 MHz
- Service Uplink: 420-422, 455-456 and 459-460 MHz
- Feeder Downlink: 216-216.5 and 217.5-218 MHz
- Feeder Uplink: 450-451 MHz[3/]

[2/] This filing addresses only the Private Land Mobile Service spectrum and should not be construed as a concurrence or endorsement of NVNG MSS proposals for other bands.

[3/] Joint Supplemental Reply Comments at 2-3. This filing addresses only the Private Land Mobile Service spectrum and should not be construed as a concurrence or endorsement of NVNC MSS proposals for other bands.

3. Our concern is that one very critical private land mobile channel remains affected by the NVNG MSS proposal. The service uplink proposal for 459-460 MHz contains a 25 kHz channel at 459.0 MHz, which is allocated to the Petroleum Radio Service and specifically dedicated for communications related to oil spill containment and clean up activities. 47 C.F.R. § 90.65(b). In light of the wide public interest to be served by preserving this channel for interference-free communications, the undersigned strongly recommend that this 25 kHz channel be removed from consideration for NVNG MSS operations.

WHEREFORE, THE PREMISES CONSIDERED, the undersigned respectfully requests the Federal Communications Commission recommend that the United States refrain from seeking a worldwide allocation at WRC-95 for MAS in any land mobile spectrum in accordance with the recommendation made herein.

Respectfully submitted,

AMERICAN PETROLEUM INSTITUTE

By: Wayne V. Black

Wayne V. Black
Its Attorney

INTERNATIONAL MUNICIPAL SIGNAL ASSOCIATION and INTERNATIONAL ASSOCIATION OF FIRE CHIEFS, INC.

By: ______________________

Martin W. Bercovici
Their Attorney

ASSOCIATION OF AMERICAN RAILROADS

By: Thomas Keller /gm

Thomas Keller
Its Attorney

INDUSTRIAL TELECOMMUNICATIONS, ASSOCIATION, INC.

By: Mark E. Crosby /gm

Mark E. Crosby
President and CEO

MANUFACTURERS RADIO FREQUENCY ADVISORY COMMITTEE, INC.

By: William K. Keane /gm

William K. Keane
Its Attorney

UTC, THE TELECOMMUNICATIONS ASSOCIATION

By: Jeffrey Sheldon

Jeffrey L. Sheldon
General Counsel

Dated: June 6, 1995

EXHIBIT C

BEFORE THE

Federal Communications Commission

WASHINGTON, D.C. 20554

RECEIVED
JUN - 7 1995
FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF SECRETARY

In the Matter of	)	
	)	
Preparation for International	)	IC Docket No. 94-31
Telecommunications Union World	)	
Radiocommunication Conferences	)	
	)	

AMERICAN PETROLEUM INSTITUTE
RESPONSE
TO
JOINT SUPPLEMENTAL REPLY COMMENTS

The American Petroleum Institute ("API"), by its attorneys, hereby respectfully submits this Response to Joint Supplemental Reply Comments ("Response"), to address the Joint Supplemental Reply Comments ("Joint Comments") filed on May 18, 1995 by pending applicants for new or modified facilities in the Non-Voice, Non-Geostationary Mobile Satellite Service ("NVNG MSS").[1/] In particular, API strongly objects to the NVNG MSS proposal to operate on the oil spill response channel at 459.000 MHz.[2/]

[1/] The Joint Commentors are comprised of: CTA Commercial Systems, Inc.; E-SAT, Inc.; Final Analysis Communication Services, Inc.; GE American Communications, Inc.; LEO ONE USA Corporation; Orbital Communications Corporation; Starsys Global Positioning, Inc.; and Volunteers in Technical Assistance.

[2/] This filing addresses only the Private Land Mobile Service spectrum and should not be construed as a concurrence or endorsement of NVNG MSS proposals for other bands.

I. PRELIMINARY STATEMENT

1. API is a national trade association representing approximately 300 companies involved in all phases of the petroleum and natural gas industries, including exploration, production, refining, marketing, and transportation of petroleum, petroleum products and natural gas. Among its many activities, API acts on behalf of its members as spokesperson before federal and state regulatory agencies. The API Telecommunications Committee is one of the standing committees of the organization's Information Systems Committee. One of the Telecommunications Committee's primary functions is to evaluate and develop responses to federal and state proposals affecting telecommunications services and facilities used in the oil and gas industries. Consistent with that mission, it also reviews and comments, where permitted, on other proposals that impinge on the ability of the energy industries to meet their telecommunications needs.

2. API members are involved in every aspect of the petroleum and natural gas business, overseeing the recovery, refining and transport of petroleum products and natural gas. These products are transported through pipelines, over rail, highways, sea lanes and inland waterways. In the event of an emergency at a refinery, drilling site or during

transport, the petroleum industry relies on the use of its oil spill response frequency assignments to direct containment and cleanup programs. Timely and efficient responses are essential to successful recovery efforts, where delay or confusion can lead to disastrous results and unwarranted additional damage to life, property and the environment.

3. The NVNG MSS Joint Comments supplement previous comments submitted by the NVNG MSS parties in this proceeding concerning the 1995 World Radiocommunication Conference ("WRC-95").[3/] Those previous comments targeted a wide range of Land Mobile Radio Service spectrum allocations. In their Joint Supplemental Reply Comments, the NVNG MSS proponents abdicated consideration of almost all Private Land Mobile Radio Service spectrum for reallocation to NVNG MSS uses. However, one private land mobile channel remains affected by the NVNG MSS proposal. The NVNG MSS service uplink proposal for 459-460 MHz contains a 25 kHz channel at 459.000 MHz, which is allocated to the Petroleum Radio Service and specifically dedicated for communications related to oil spill containment and clean up activities. 47 C.F.R. § 90.65(b).

[3/] FCC 95-36, (Released: January 31, 1995).

II. RESPONSE

A. NVNG MSS Proponents' Engineering Data is Fatally Flawed

4. The Joint Comments state that NVNG MSS uplinks can effectively share with the operations of the Domestic Public Land Mobile Radio Service (DPLM) at 459-460 MHz.4/ It is further stated that the Engineering Statement accompanying the Joint Comments concludes that sharing of the band is practical.5/ API disagrees. The Engineering Statement is fatally flawed regarding the 25 kHz channel at 459.000 MHz.

5. API submits that the Engineering Statement neglected to properly analyze the impact of sharing on the 459.000 MHz channel and only analyzed the practicality of sharing with DPLM. Beyond recognizing that the 459.000 MHz channel exists for oil spill containment and clean up operations, the Engineering Statement contains no hard data as to why the proposed NVNG MSS sharing will not disrupt operations on that channel.6/ The Engineering Statement

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4/ Joint Comments at 12.

5/ Joint Comments, Appendix A, Engineering Statement Re Comments in IC Docket No. 94-31 Review and Analysis of Spectrum Between 100-512 MHz for Sharing With NVNG MSS Services, May 1995, Cohen, Dippell and Everist, P.C., Consulting Engineers, Radio and Television, Washington, D.C.

6/ Id. at 4-5.

only notes that "it is reported" that the entire 459-460 MHz band does not enjoy active use and that scanner monitoring of the entire band during regular business hours in the Washington, D.C. area revealed "very few transmissions within this band during the monitoring period."[7] Based on this scanty, and wholly inadequate assessment, the Engineering Statement concluded that the band experiences only low and intermittent usage levels and thus the entire band, including the 459.000 MHz channel, should be free for NVNG MSS sharing.[8]

6. This analysis reveals a basic misunderstanding of, and dangerous disregard for, the fundamental purpose of the Petroleum Radio Service oil spill response channel. The 459.000 MHz channel is licensed on a secondary basis to Petroleum Radio Service licensees for day-to-day operations. These licensees purposely do not utilize the channel for heavy traffic loads <u>because the main purpose of the channel is to keep it clear for communications directly related to oil spill and containment operations</u>. In the event of an oil spill or containment operation, the secondary users must immediately cease operations. The danger of substantial and harmful interference caused by NVNG MSS service uplinks to

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7/ Id. at 5.

8/ Id.

primary oil spill and containment operations on this channel is intolerable. Oil spill and containment operations can occur practically anywhere and at anytime throughout the nation. API respectfully submits that the NVNG MSS proposal for use of the channel should be summarily rejected.

7. The Engineering Statement notes that up to 20 earth stations throughout the continental United States would operate with 459-460 MHz feeder uplinks.[9/] API submits that the public interest would not be served by denying oil spill and containment coverage to the people and property affected by important spill and containment operations in those 20 areas.

8. API asks that this 25 kHz channel be removed from consideration for NVNG MSS operations. The Joint Comments contain a change in position on allocations by NVNG MSS proponents which concedes that land mobile spectrum is heavily utilized and that any sharing with non-geostationary MSS below 1 GHz would cause substantial and harmful interference to the land mobile services. It would be most unfortunate if the only land mobile channel targeted was one

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9/ Id.

dedicated for communications directly related to oil spill containment and cleanup activities.

WHEREFORE, THE PREMISES CONSIDERED, API respectfully requests the Federal Communications Commission recommend that the United States refrain from seeking a worldwide allocation at WRC-95 for NVNG MSS operations at 459.000 MHz or in any other land mobile spectrum in accordance with the recommendation made herein.

Respectfully submitted,

AMERICAN PETROLEUM INSTITUTE

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Its Attorneys

Dated: June 7, 1995

CERTIFICATE OF SERVICE

I, Patt Meyer, a secretary in the law firm of Keller and Heckman, do hereby certify that a copy of the foregoing RESPONSE TO JOINT SUPPLEMENTAL REPLY COMMENTS has been served this 7th day of June, 1995, by mailing U.S. first class, postage prepaid, to the following:

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